

REMARKS

The Office Action dated September 24, 2007 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claim 1 have been amended to more particularly point out and distinctly claim the subject matter of the invention. Claims 9-10 have been added. No new matter has been added and no new issues are raised which require further consideration or search. Therefore, claims 1-10 are currently pending in the application and are respectfully submitted for consideration.

The Office Action provisionally rejected claim 1 on the ground of non-statutory obviousness-type double-patenting over claim 1 of co-pending Application No. 10/814343 in view of Kuno. Applicants respectfully request that the provisional rejection be held in abeyance until the present application or the co-pending application is in condition for allowance and the claims are in final form.

The Office Action rejected claims 1-5 and 7-8 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,802,494 ("Kuno"). The rejection is respectfully traversed for at least the following reasons.

Claim 1, upon which claims 2-9 are dependent, recites an image transmission system for a mobile robot. The image transmission system includes a camera for capturing an image as an image signal, and human detecting means for detecting a human from the captured image. The image transmission system further includes a power drive

unit for moving the entire robot toward the detected human, and face identifying means for identifying a position of a face of the detected human. The image transmission system further includes face image cut out means for cutting out a portion of the captured image of the detected human so that the portion of the image includes a face image of the detected human, and image transmitting means for transmitting only the cut out portion of the image including the face image to an external terminal.

Claim 10 recites an image transmission system for a mobile robot. The image transmission system includes a camera for capturing an image as an image signal, and human detecting means for detecting a human from the captured image. The image transmission system further includes a power drive unit for moving the entire robot toward the detected human, and image cut out means for cutting out a portion of the captured image so that the portion of the image includes an image of the detected human according to information from the camera. The system further includes image transmitting means for transmitting only the cut out portion of the image including the human image to an external terminal.

Thus, according to embodiments of the invention, a mobile robot is provided that can locate or identify an object such as a person, and transmit the image of the object or person to a remote terminal. The mobile robot can autonomously detect a human and transmit the image of the person, in particular the face image of the person. The mobile robot can also accomplish the task of finding children who are separated from their parents in a crowded place, and thus, help their parents reunite with their children.

According to embodiments of the invention, by cutting out the image of the face, even when the image signal is transmitted to a remote terminal with a small screen, the face image can be shown in a clearly recognizable manner. Also when the image is shown in a large screen, the viewer can identify the person even from a great distance.

As will be discussed below, Kuno fails to disclose or suggest all of the elements of the claims, and therefore fails to provide the advantages and features discussed above.

Kuno generally describes video cameras (31a, 31b) and a microphone incorporated in the robot capable of taking an image of the patient and detects speech produced by the patient, as described in column 3, lines 41-45 of Kuno. The robot can analyze facial features of the patient to determine if the patient is facing toward or away from the cameras, as described in the upper-half of column 13 of Kuno. The robot can determine whether or not the patient is “making strange facial expressions” frequently, which can lead to a determination that the patient is in “abnormal condition and should, therefore, be monitored and examined by a physician.”

Applicants respectfully submit that Kuno fail to disclose, teach, or suggest, all of the elements of the present claims. For example, Kuno fails to disclose, teach, or suggest, at least, “face image cut out means for cutting out a portion of the captured image of the detected human so that the portion of the image includes a face image of the detected human,” and “image transmitting means for transmitting only the cut out portion of the image including the face image to an external terminal,” as recited in claim 1, and similarly recited in claim 10.

Applicants respectfully submit that the feature of cutting out a portion of the captured image of the detected human so that the portion of the image including a face image of the detected human and transmitting only the cut out portion of the image including the face image to an external terminal is not disclosed nor suggested by the prior art.

The Office Action took the position that Kuno discloses a “face image cut out means for cutting out an image of the detected human.” Specifically, the Office Action took the position that the passage in column 9, lines 43-44 discloses a “face image cut out means” by disclosing that a signal processor extracts image-data items representing the head of a subject.

Kuno discloses a monitoring system where the image capturing component is a separate component from the image processing component, and only the image capturing component is comprised within the robot of the monitoring system. As described at column 3, lines 27-31, the monitor system of Kuno consists of a data-acquiring section 1, a monitor section 2, a signal transfer path 3 connecting the sections 1 and 2 together, and a data-processing/control center 4 connected to the section 1 and the path 3. As further described at column 3, lines 31-35, the data-acquiring section comprises a robot 5, among other components. As further described in column 3, line 64 – column 4, line 4, the data-processing/control section 4 is designed to process the various data items the section 1 has acquired of the subject, and the data-processing/control section is a component independent of the data-acquiring section 1 and the monitor section 2. As further

described at column 4, lines 14-18, the video signals, including the video signal generated by the video camera in the robot 5 of the data-acquiring section 1, are input to the signal processor 32, which is incorporated in the data-processing/control section 4; and it is the signal processor 32 which process these input signals and generates image data. Kuno further discloses, at column 7, lines 41-50, that it is the signal processor 32, which extracts the image-data items representing the head of the subject from the video signals output by the video camera of robot 5.

In contrast, claim 1 of the present application recites “an image transmission for a mobile robot, comprising ... face image cut out means for cutting out a face image from the captured image of the detected human.” The specification of the present application makes clear that both the image processing component and the image capturing component are comprised within the mobile robot at column 4, lines 15-17, where it states that the mobile robot “comprises an image input 2, ... an image processing unit 4 connected to the image input unit 2 for cutting out a desired part of the obtained image.”

Therefore, in Kuno, the image data captured by the image capturing component is all transmitted to the image processing component outside the robot, and there is no disclosure or suggestion as to cutting out a portion of the captured image of the detected human so that the portion of the image includes a face image of the detected human. Thus, Kuno fails to disclose the “face image cut out means” as claimed in claim 1.

The Office Action also took the position that Kuno discloses an “image transmitting means for transmitting the cut out face image to an external terminal.”

Specifically, the Office Action took the position that the passage in column 1, lines 60-62 discloses an “image transmitting means” by disclosing that the system of Kuno transmits the signals showing the subject’s image to a CRT display installed in a monitor room. We also believe that this position is incorrect, and, therefore, propose arguing that Kuno fails to disclose or suggest an “image transmitting means” as recited in claim 1.

The passage that the Office Action cites in Kuno does not disclose a image transmitting means for transmitting the cut out face image to an external terminal because the cited passage discloses that the system of Kuno transmits an unaltered image of the patient captured by the camera of the robot in Kuno to a CRT display, not a cut out face image. Kuno does not disclose a robot transmitting a cut out face image to an external terminal. It is the signal processor of the system in Kuno, which as described above, is not part of the mobile robot, which processes the video captured by the mobile robot and transmits a cut out face image to a CRT display.

In contrast, claim 1 of the present application recites an image transmission for a mobile robot, comprising ... image transmitting means for transmitting the cut out face image to an external terminal. Again, the specification of the present application makes clear that it is the mobile robot that transmits the cut out face image to the external terminal.

Therefore, the image data captured by the image capturing component is all transmitted to the image processing component outside the robot, and there is no disclosure or suggestion as to transmitting only the cut out portion of the image including

the face image to an external terminal. Thus, Kuno fails to disclose the “image transmitting means” as claimed in claim 1.

Applicants respectfully submit that Kuno, and other cited prior art documents, are silent as to the above feature of claim 1. Thus, Applicants respectfully submit that claim 1 has a novel feature that is not disclosed nor suggested by the cited prior art reference, Kuno, and thus, claim 1 should be allowed.

Claims 1 and 10 are separate claims that have their own scope. However, claim 10 recites similar features as those of claim 1 except that in claim 10 the image transmitted to an external terminal includes an image of the detected human instead of a face image of the detected human. Thus, Applicants respectfully submit that claim 10 should be allowed over the reference cited for claim 1, Kuno.

Thus, Kuno fails to disclose, teach, or suggest, at least, “face image cut out means for cutting out a portion of the captured image of the detected human so that the portion of the image includes a face image of the detected human,” and “image transmitting means for transmitting only the cut out portion of the image including the face image to an external terminal,” as recited in claim 1, and similarly recited in claim 10.

Therefore, for at least the reasons discussed above, Kuno fails to disclose, teach, or suggest, all of the elements of claims 1 and 10. For the reasons stated above, Applicants respectfully request that this rejection be withdrawn.

Claims 2-5 and 7-9 depend upon claim 1. Thus, Applicants respectfully submit that claims 2-5 and 7-9 should be allowed for at least their dependence upon claim 1, and for the specific limitations recited therein.

The Office Action rejected claim 6 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Kuno and U.S. Publication No. 2004/0028260 (“Higaki”). The Office Action took the position that Kuno discloses all the elements of the claims with the exception of “a face database that stores images of a plurality of faces and face identifying means for comparing the cut out face image with the faces stored in the face database to identify the cut out face image.” The Office Action then cited Higaki as allegedly curing the deficiencies of Kuno. The rejection is respectfully traversed for at least the following reasons.

Claim 6 depends upon claim 1. As discussed above, Kuno does not disclose, teach, or suggest all of the elements of claim 1. Furthermore, Higaki does not cure the deficiencies in Kuno, as Higaki is not valid prior art because the pertinent portions of Higaki, which the Office Action used to reject claim 6 of the present application, were invented by the inventors of the present application, and therefore, not by others as required by 35 U.S.C. § 102(a). (see Declaration Under 37 C.F.R. 1.131). Therefore, the cited prior art fails to disclose, teach, or suggest all the elements of claim 6. Additionally, claim 6 should be allowed for at its dependence upon claim 1, and for the specific limitations recited therein.

For at least the reasons discussed above, Applicants respectfully submit that the cited prior art references fails to disclose or suggest all of the elements of the claimed invention. These distinctions are more than sufficient to render the claimed invention unanticipated and unobvious. It is therefore respectfully requested that all of claims 1-10 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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Enclosures: Request for Continued Examination (RCE) Transmittal
Petition for Extension of Time
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English Translation of JP 2003-094166
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